

REMARKS/ARGUMENTS

As required by the Examiner, the specification has been amended to update the status of related applications identified therein. No new matter has been added by any of the amendments to the specification.

Claims 1-4, 6-13, 15-21 and 23-25 are pending in the present application. Claims 1, 3, 10, 12, 18 and 20 were amended; and claims 5, 14 and 22 were canceled. No claims were added. Applicants have carefully considered the cited art and the Examiner's comments, and believe the claims patentably distinguish over the cited art and are allowable in their present form. Reconsideration of the rejection is, accordingly, respectfully requested in view of the above amendments and the following comments.

Initially, it is noted that the Office Action Summary indicates that claims 1-21 are pending in the application and that claims 1-21 are rejected. Also, the body of the Office Action only discusses claims 1-21. The application, however, contains claims 1-25 as was confirmed in the Official Filing Receipt mailed December 23, 2003. Claims 22-25 do not appear to have received an examination on the merits. It is respectfully requested that the Examiner acknowledge, in the next Office communication, that the application did originally contain claims 1-25 and that each of claims 1-4, 6-13, 15-21 and 23-25 currently in the application has received a full examination on the merits.

Claims 3, 12, and 20 have been amended as requested by the Examiner to correct informalities therein. Withdrawal of the objection with respect to those claims is, accordingly, respectfully requested. In addition: claims 1, 10 and 18 have been amended to correct minor informalities noted by Applicants and to incorporate the subject matter of canceled claims 5, 14 and 22, respectively. The claims are now believed to be in proper form throughout.

I. 35 U.S.C. § 101: Claims 18-21

The Examiner has rejected claims 18-21 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. In particular, the Examiner contends that claims 18-21 are directed to non-statutory subject matter because "a computer-readable medium" is defined to include "transmission-type media" which includes wireless transmission media as mentioned in page 64, lines 15-30 of the specification.

The Examiner asserts that claims 18-21 are not limited to tangible embodiments. No basis is present for holding a computer usable medium claim non-statutory because the medium may be allegedly "intangible." The MPEP states:

In this context, "functional descriptive material" consists of **data structures** and computer programs **which impart functionality when employed as a computer component**. (The definition of "data structure" is "a physical or logical relationship

among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). (**emphasis added**)

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Claims 18-21 recite clearly functional descriptive material since it imparts functionality when employed as a computer component. Moreover, the functional descriptive material of claims 18-21 is recorded on "some" computer-readable medium.

In the above context, the term "some" means "any" computer-readable medium. The MPEP does not draw any distinctions between one type of media that is considered to be statutory and another type of media that is considered to be non-statutory. To the contrary, the MPEP clearly states that as long as the functional descriptive material is in "some" computer-readable medium, it should be considered statutory. The only exceptions to this statement in the MPEP are functional descriptive material that does not generate a useful, concrete and tangible result, e.g., functional descriptive material composed completely of pure mathematical concepts that provide no practical result. Claims 18-21 clearly recite a useful, concrete and tangible result in that data is generated upon encountering an indicator in a set of indicators when executing a compiled program and the generated data is collected. This is not just some disembodied mathematical concept or abstract idea.

Thus, claims 18-21 are directed to functional descriptive material that provides a useful, concrete and tangible result, and which is embodied on "some" computer-readable medium. Therefore, claims 18-21 are statutory and fully satisfy the requirements of 35 U.S.C. § 101.

Nonetheless, in order to expedite prosecution, claim 18 has been amended to recite a "recordable-type computer readable medium". This terminology is fully supported in the specification at page 64, lines 24-26 and fully satisfies the requirements of 35 U.S.C. § 101.

Therefore, the rejection of claims 18-21 under 35 U.S.C. § 101 has been overcome.

Although not mentioned in the Office Action, claims 23-25 depend from and further restrict amended claim 18, and also satisfy the requirements of 35 U.S.C. § 101.

II. 35 U.S.C. § 102, Anticipation: Claims 1-7, 9-16, and 18-21

The Examiner has rejected claims 1-7, 9-16, and 18-21 under 35 U.S.C. § 102(a) as being anticipated by Spivey, U.S. Patent Publication No. 2003/0066055. This rejection is respectfully traversed.

In rejecting the claims, the Examiner states:

Claim 1:

Spivey discloses a method in a data processing system for monitoring the execution a compiled program having a set of groupings, the method comprising:

selecting a grouping from the set of groupings for the compiled program to form a selected grouping (see for example page 3, [0038], Fig. 1, item a, and related text);

associating a set of indicators with instructions in the selected grouping within the set of grouping, wherein a set of indicators provides data on the execution of the instructions by a processor executing the instructions (see for example page 3, [0038], and related text); and

executing the compiled program, wherein data is generated upon encountering an indicator in the set of indicators (see for example page 3, [0038], [0040], lines 4-8); and collecting the data (see for example page 3, [0040], page 4, [0048]).

Office Action dated August 24, 2006, page 4.

Claim 1 of the present application is as follows:

1. A method in a data processing system for monitoring the execution of a compiled program having a set of groupings, the method comprising:
 - selecting a grouping from the set of groupings for the compiled program to form a selected grouping;
 - associating a set of indicators with instructions in the selected grouping within the set of groupings, wherein the set of indicators provides data on the execution of the instructions by a processor executing the instructions;
 - executing the compiled program, wherein data is generated upon encountering an indicator in the set of indicators, the data comprising at least one of a number of times each instruction on the selected grouping has been executed and a number of visits to the selected grouping; and
 - collecting the data.

A prior art reference anticipates a claimed invention under 35 U.S.C. § 102 only if every element of the claimed invention is identically shown in that single prior art reference, arranged as they are in the claims. *In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990). All limitations of a claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983).

Applicants respectfully submit that Spivey does not identically show every element of the claimed invention arranged as they are in the claims; and, accordingly, does not anticipate the claims. With respect to claim 1, in particular, Spivey does not disclose or suggest any of the claimed steps of

"selecting a grouping from the set of groupings for the compiled program to form a selected grouping", "associating a set of indicators with instructions in the selected grouping within the set of groupings, wherein the set of indicators provides data on the execution of the instructions by a processor executing the instructions" or "executing the compiled program, wherein data is generated upon encountering an indicator in the set of indicators, the data comprising at least one of a number of times each instruction on the selected grouping has been executed and a number of visits to the selected grouping."

Spivey is directed to a method for analyzing the run-time performance of computer programs which it refers to as "profiling". In rejecting the claims, the Examiner refers primarily to paragraph [0038] and Figure 1 of Spivey as disclosing the claimed steps of "selecting a grouping from the set of groupings for the compiled program to form a selected grouping" and "associating a set of indicators with instructions in the selected grouping within the set of groupings, wherein the set of indicators provides data on the execution of the instructions by a processor executing the instructions". Paragraph [0038] of Spivey reads as follows:

[0038] FIG. 1 illustrates a simple program and its corresponding call-graph. It can be seen from FIG. 1 that there is a routine called "main" which calls subroutines a, b, max and c. There is an additional routine called "sig" which has no ancestors or descendents. The aim of a profiler producing a dynamic call-graph is to record only the routines and arcs which are traversed during an execution of the profiled program. In order to profile a program, the code of the program must be "instrumented" which means including calls to profiling routines at the beginning and end of each subroutine in the program. In the present invention these calls result in the construction of the data structure as explained below which record the call-graph of the program as a series of states of a finite state machine, and the time spent in each state. In the embodiment of the invention mentioned below, the program being profiled is instrumented using instrumenting subroutines offered by the GNU, Gcc compiler, which is readily available.

In the above paragraph, Spivey discloses a routine called "main" which calls subroutines "a", "b", "max" and "c"; and an additional routine called "sig". As described in the above paragraph, the aim of the profiler is to produce a dynamic call graph to record only routines and arcs which are traversed during an execution of a profiled program. Nowhere in the above paragraph, however, is there any disclosure or suggestion of "selecting a grouping" from "a set of groupings" for a compiled program to form a selected grouping as recited in claim 1. Spivey does not disclose such a selecting step either in the above paragraph or anywhere else in the reference.

Spivey also does not disclose or suggest that a set of indicators are associated with instructions in the selected grouping within the set of groupings, wherein the set of indicators provides data on the execution of the instructions by a processor executing the instructions. Paragraph [0038] in Spivey does

not describe a set of indicators nor does it disclose that a set of indicators are associated with instructions in a selected grouping of a set of groupings as recited in claim 1.

Yet further, Spivey does not disclose or suggest “executing the compiled program, wherein data is generated upon encountering an indicator in the set of indicators, the data comprising at least one of a number of times each instruction on the selected grouping has been executed and a number of visits to the selected grouping” as recited in claim 1. The Examiner refers to lines 4-8 in paragraph [0040] of Spivey as well as paragraph [0038] reproduced above as disclosing this feature. Paragraph [0040], lines 4-8 is as follows:

Thus the finite state machine is constructed dynamically during execution of the program in that during execution of the profiled program, the first time a distinct call sequence of subroutines arises, the corresponding state is created and added to the state machine.

Neither paragraph [0038] nor the above recitation in paragraph [0040] discloses that “data is generated upon encountering an indicator in the set of indicators, the data comprising at least one of a number of times each instruction on the selected grouping has been executed and a number of visits to the selected grouping” when a compiled program is executing. The above recitation in paragraph [0040] only describes constructing a state machine dynamically the first time a distinct call sequence of subroutines arises. This is not the same as generating data upon encountering an indicator in a set of indicators as recited in claim 1. Spivey does not disclose a set of indicators nor does it disclose “executing the compiled program, wherein data is generated upon encountering an indicator in the set of indicators, the data comprising at least one of a number of times each instruction on the selected grouping has been executed and a number of visits to the selected grouping” as recited in claim 1.

For at least all the above reasons, Spivey does not identically disclose every element of the claimed invention as recited in claim 1 and does not anticipate claim 1.

Claims 2-4, 6-7 and 9 depend from and further restrict claim 1 and are also not anticipated by Spivey, at least by virtue of their dependency. In addition, many of these claims recite additional features which are neither disclosed nor suggested in Spivey. For example, claim 6 depends from claim 1 and recites that the set of indicators are located in a shadow memory. Although the Examiner indicates that the subject matter of claim 6 is disclosed in Spivey, no reference to any such disclosure is provided, nor have Applicants been able to identify any such disclosure.

Independent claims 10 and 18 recite similar subject matter as claim 1 and are not anticipated by Spivey for similar reasons as discussed above with respect to claim 1. Claims 11-13 and 15-16 depend from and further restrict claim 10, and claims 19-21 depend from and further restrict claim 18. These claims are also not anticipated by Spivey at least by virtue of their dependency.

Therefore, the rejection of claims 1-7, 9-16, and 18-21 under 35 U.S.C. § 102 has been overcome.

III. 35 U.S.C. § 103, Obviousness: Claims 8 and 17

The Examiner has rejected claims 8 and 17 under 35 U.S.C. § 103 as being unpatentable over Spivey in view of French et al., U.S. Patent Publication No. 2003/0131343. This rejection is respectfully traversed.

In rejecting claims 8 and 17, the Examiner acknowledges that Spivey fails to disclose that the method is located in a scanning daemon, and cites French as disclosing this feature. Claims 8 and 17, however, depend from and further restrict claims 1 and 10, respectively. French does not supply the deficiencies in Spivey as discussed in detail above, and claims 8 and 17, accordingly, patentably distinguish over Spivey in view of French at least by virtue of their dependency from allowable claims.

Therefore, the rejection of claims 8 and 17 under 35 U.S.C. § 103 has been overcome.

IV. Conclusion

For at least all the above reasons, claims 1-4, 6-13 and 15-21 rejected by the Examiner patentably distinguish over the cited art and are allowable in their present form. In addition, claims 23-25, which have not received an action on the merits, also patentably distinguish over the cited art, at least by virtue of their dependency from allowable claim 18. Accordingly, this application is now believed to be in condition for allowance, and it is respectfully requested that the Examiner so find and issue a Notice of Allowance in due course.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: November 22, 2006

Respectfully submitted,

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